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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,161	07/23/2003	Jeong-Hwan Song	5000-1-414	8002
33942	7590	04/20/2006	EXAMINER	
CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652			LEPISTO, RYAN A	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

8

<b>Office Action Summary</b>	Application No. 10/625,161	Applicant(s) SONG ET AL	
	Examiner Ryan Lepisto	Art Unit 2883	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-6, 8-13 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-6, 8-13 and 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

1. **Claims 2-3, 8-10, 15-16 and 20** are rejected under 35 U.S.C. 102(a) as being anticipated by **Alcatel (Laid Open application EP 01440418.0)**. Alcatel teaches an athermal arrayed-waveguide grating (AWG) (Figs. 1 and 3) comprising a substrate (12), input glass waveguides (14n) formed for inputting two or more optical signals, a glass grating array (20k) formed for separating the input optical signals into different wavelengths, a first slab (16) formed having a first polymer layer (Fig. 3, 324) that couples the input waveguides (14n) to a second glass layer (Fig. 3, 323) having a refractive index different than the polymer layer (324) (all glass layers have a different refractive index than the polymer layer and equal refractive indices to all other glass layers) that couples the first layer (324) to the grating array (20k), a second slab (18) formed for causing the different light wavelengths separated at the grating array to be imaged on an egress surface and an output waveguide array (22m) formed for outputting each light wavelength imaged on the second slab (18) (pages 12 (all), page 15 second paragraph).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 6, 13 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Alcatel as applied to claims 2-3, 8-10, 15-16 and 20 above, and further in view of what would have been obvious to one of ordinary skill in the art at the time of the invention.

Alcatel teaches the athermal arrayed-waveguide described above.

Alcatel does not teach expressly the first layer of the first slab having a length of 21.07  $\mu\text{m}$  in a direction in which the optical signal travels.

At the time the invention was made, it would be obvious to a person of ordinary skill in the art to have a length for the first layer of about 21.07  $\mu\text{m}$  in that this is a dimension that is typical in known waveguide gratings. Applicant has not disclosed that an exact length of 21.07  $\mu\text{m}$  provides an advantage, is used for a particular purpose, or solves a stated problem over say, 21.03  $\mu\text{m}$  or any dimension well known in the art. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with waveguide grating with the differing refractive index layers as taught by Alcatel because it compensates for temperature fluctuations and teaches that there are many number of design parameters that can be optimized in order to keep losses small (page 17 second paragraph).

Therefore, it would have been obvious to one of ordinary skill in this art to modify Alcatel to obtain the invention as specified in claims 6, 13 and 19.

The motivation would have been to create an efficient waveguide-grating array that is not associated with optical losses that result from a shift in wavelengths.

3. **Claims 4, 11 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Alcatel as applied to claims 2-3, 8-10, 15-16 and 20 above, and further in view **Terada et al (US 4,812,012)** (Terada).

Alcatel teaches the athermal arrayed-waveguide described above.

Alcatel does not teach expressly a layer of material in the first slab waveguide having a refractive index of 1.415.

Terada teaches materials used in forming optical waveguides, where one is a polymer, polyfluoromethacrylate having a refractive index of 1.415 (column 6 lines 63-64).

Alcatel and Terada are analogous art because they are from the same field of endeavor, optical systems using polymer optical waveguide materials.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the polymer as taught by Terada for the first layer as taught by Alcatel since Alcatel teaches only that the first layer is a polymer part (page 12 second paragraph).

The motivation for doing so would have been to increase efficiency in the waveguide grating array by using material known to produce waveguides capable of

Art Unit: 2883

performing at high speeds and accuracy (Terada, column 7 line 20 through column 8 line 4).

4. **Claims 5, 12 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Alcatel as applied to claims 2-3, 8-10, 15-16 and 20 above, and further in view of **Yoneda (US 2003/0021567 A1)** (Yoneda).

Alcatel teaches the athermal arrayed-waveguide described above.

Alcatel does not teach expressly a layer of material in the first slab waveguide having a refractive index of 1.46.

Yoneda teaches an AWG (Fig. 10) with a substrate (203) with waveguides formed of the substrate where the layer is a glass Si substrate with refractive index of 1.46 (paragraph 0086).

Alcatel and Yoneda are analogous art because they are from the same field of endeavor, waveguide grating arrays with a glass Si layer with waveguides.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the Si glass as taught by Yoneda for the second layer as taught by Alcatel since Alcatel teaches that the second layer may be a glass part (page 12 paragraph 2) and since both are well known glasses widely used in the art at the time of the invention.

The motivation for doing so would have been to increase efficiency in the AWG by using materials that will suppress the fluctuations of characteristics of optical waveguides elements due to temperature changes (Yoneda, abstract).

***Response to Arguments***

5. Applicant's arguments with respect to rejected claims have been considered but are moot in view of the new ground(s) of rejection.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Lepisto whose telephone number is (571) 272-1946. The examiner can normally be reached on M-Th 7:30AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ryan Lepisto

Art Unit 2883

Date: 4/4/06



Frank Font

Supervisory Patent Examiner

Technology Center 2800